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XV.

OBSERVATIONES LICHENOLOGICÆ, No. 4.

OBSERVATIONS ON NORTH AMERICAN AND OTHER LICHENS.

BY EDWARD TUCKERMAN, M.A.

(Continued from Vol. VI. p. 287.)

Read May 29, 1877.

PYXINE. The black hypothecium of *Physcia picta* distinguishes it from the rest of the genus, and suggests an association with *Pyxine*; to which, indeed, this *Physcia* is in other respects significantly similar. *Pyxine*, thus enlarged, falls into two sections:—

1. DIRINARIA. Apothecia scutellæform. Thallus normally white within. *P. picta* (Sw.).—The species should probably include *Parmelia confluens* (Fr.) united by Nylander with the earlier *P. ægialita*, Ach.: at least no difference seems to be noted.—*P. picta* occurs now saffron-colored within (v. *erythrocardia*, Tuckerm. in Wright *Lich. Cub.* n. 94) like *Physcia obscura*; but also probably to be compared in this respect with *Pyxine coccinea*, M. & V. d. B., of the next section.

2. PYXINE PROPER. Apothecia (similar at first, in a tropical form, to those of the first section, but finally) blackening all over and leci-deoid. Thallus soon more or less yellowish within. *P. cocoes* (Sw.).—The other supposed species of this section are scarcely well defined. *P. cocoes* v. *Meissneri* (*P. Meissneri* of these *Obs.* 1, in Proc. Acad. Amer. 4, p. 400) might indeed often be taken, and was taken by Meissner, for a *Physcia*; but the margin of the apothecium soon blackens, when the lichen is ill distinguishable from the original *Lichen Cocoes* (Sw. *Lich. Amer.* t. 2).—Another of the more delicate tropical exhibitions of *Pyxine* is marked by the reticulate wrinkling of the upper surface (*P. retirugella* Nyl. *Lich. exot.*) but otherwise is close enough to *P. Cocoes*.—From this may well seem more separable the larger lichen, extending far northward, which furnished Fries the type of the genus (v. *sorediata*, Tuckerm. l. c.), but this differs only in size, and not always in that respect, from forms easily included in *P. Cocoes*.

— The larger form just named is not, however, confined to the north, and exhibits in the tropics a peculiar luxuriance in quadrilocular spores (v. *Eschweileri*, Mihi; given in Wright *Lich. Cub.* n. 94, in part) which renders necessary a modification of the genus-character, though the lichen in question (like *Physcia obscurascens*, Nyl. *Syn.*, as compared with *Physcia obscura*) have little claim to be reckoned a species. And, lastly, it may be said that *Pyxine coccinea*, M. & V. d. B. (*Lich. Jav.* p. 40), which is distinguished, like the last variety, from the var. *sorediata* by rather larger and quadrilocular spores, seems scarcely otherwise to differ from this, but as *P. picta*, v. *erythrocardia*, from the type of that species, or, as *Physcia obscura*, v. *endochrysea*, Hamp. (the oldest name of a repeatedly named anamorphous condition) when the medullary layer has become red from the same when as yet it is only yellow. Systematic Natural History is so much a matter of opinion, that it may sometimes seem difficult, at this day, to fully assert its position in the face of more purely objective science: surely, then, all those who love the study of the system will desire that the term “species” should express something worth knowing; that its value should be enforced and extended rather than diminished and frittered away.

UMBILICARIA CAROLINIANA, sp. nov.: thallo membranaceo lævigato papuloso rotundato-lobato mox polyphyllō complicatoque olivaceo-fusco, subtus lacunoso papillato-granulato atro, fibrillis paucis hinc inde ob-
sitis; apotheciis subelevatis mox plicatis deinceps papillato-proliferis. Sporæ (2^{næ}?) ellipsoideæ, muriformi-multiloculares, fuscæ, longit. 0,030-40^{mm}, crassit. 0,020-23^{mm}. — *U. mammulata*, Tuckerm. *Syn. N.E.* p. 69, non Ach. *fide* Nyl. *l. infra cit.* — Rocks, Grandfather Mountain, N. Carolina, *M. A. Curtis*. High mountains of N. Carolina, *S. B. Buckley*. A well-marked *Umbilicaria*, but the material before me for its illustration is small. The plant was pretty confidently referred, at the place cited above, to the North American *Gyrophora mammulata*, Ach. *Syn.*, both from the diagnosis and the name; and this judgment seemed to be confirmed by my notes (made in 1850) on a specimen then preserved in the museum of the Royal Society of Upsal. But Dr. Nylander (*Lich. Scand.* p. 115) says distinctly, that Acharius's lichen is “*spodochroa, apotheciis non rite evolutis.*” Dr. T. H. Fries also refers it (*Lich. Scand.* p. 154) to “*spodochroa, rhizinis evolutis vel (maximam partem) in tubercula nigra mutatis;*” and it is evident that neither of these references is to the North Carolina plant. *U. dictyiza*, Nyl. (*Flora Ratisb.* 1869, p. 388) of the same section of the genus as the lichen above described, is, according to Stizenberger (*Index Lich. Hy-*

perb., p. 22) from Newfoundland; and no description of it is known to me.

STICTA HALLII, sp. nov.: thallo coriaceo reticulato-celluloso subtiliter rimuloso-granulato sparsimque villosiusculo cinereo-glaescente, laciniis rotundatis subintegris, subtus venoso-costato tomentoso maculis pallidioribus nudis notato; apotheciis sparsis (latit. 2-3 millim.) sessilibus, excipulo villosio integre marginato, disco rufo-fusco. Sporæ naviculares, biloculares, fuscae, longit. 0,023-36^{mm}, crassit. 0,009-14^{mm}. — Trunks, Oregon, *E. Hall*, 1871. Of the stock of *S. scrobiculata*, and closely approaching this species, from which it yet differs in its more or less villous upper side, its veiny under side, its villous apothecia, and especially in its brown, always bilocular spores, which are not reconcilable with those of the other. Some of the specimens show indications of the peculiar sorediation of *S. scrobiculata*, — a feature characteristic also in *S. anthraxis*, Ach., of the same region. The lichen differs from the older species perhaps less in the thallus, than *S. Oregana* (*Mihi* in Bull. Torr. Bot. Club, April, 1874) from *S. pulmonaria*; but more in the spores. It is dedicated to the discoverer, my friendly correspondent, Elihu Hall.

ERIODERMA VELLIGERUM, sub-sp. nov.: thallo imbricato cinerascens, lobis adscendentibus rotundatis sinuato-incisis margine subcrispis dense hirsutis, subtus sulphureo; apotheciis (2-4 millim. latis) marginalibus extus hirsutis, disco fusciscente. Sporæ octonæ rotundato-ellipsoideæ, simplices, limbatae, longit. 0,009-16^{mm}, crassit. 0,008-10^{mm}, leviter in thecis infuscatæ dein incolores. — Shores of the Straits of Magellan, *Rev. Dr. Thomas Hill* (Hassler exp. 1872). Not well comparable with such species as *E. polycarpum* and *E. Wrightii*, which exhibit the normal Peltigerine frond, but differing from that exactly as some imbricated and crisped forms of *Peltigera rufescens*. The hirsute upper surface and sulphur-colored under side, as well as the habit of growth, distinguish the lichen from what I have seen of *Erioderma Chilense*, but the last is very near, and said by Montagne to be also imbricate, as it has similar though more rounded spores. I cannot but still consider this little group as belonging to the *Peltigerei*.

PANNARIA SYMPTYCHIA, sp. nov.: thallo foliaceo membranaceo-cartilagineo cæspitoso-polyphylo livido-fusciscente, lobis sinuato-repandis flexuosis complicatis subtus nudis fuscis; hypothallo obsoleto; apotheciis (latit. c. 1^{mm}) biatorinis sessilibus, margine tenui integerrimo fusco discum convexum nigrum opacum cingente. Sporæ octonæ, ellipsoideæ, simplices, incolores, longit. 0,009-16^{mm}, crassit. 0,007-10^{mm}, paraphysibus incrassatulis distinctis. — On rocks (apparently) island of Juan Fer-

nandez, *Rev. T. Hill* (Hassler exp. 1872). Thallus with something of the aspect of an *Endocarpon* not remote from *E. minutum* v. *aquatium*, Schær., but the internal structure of *Pannaria* § *Coccocarpia*. Collogonidia disposed in short chains. Hymeneal gelatine becoming first blue, and then wine-red with iodine. I cannot compare the species with any other. Spermogones have not occurred.

PANNARIA SONOMENSIS, sp. nov.: thallo parvulo radiante olivaceo, laciniis linearibus ramosis striatis, centralibus teretiusculis dein intricatis, periphericis magis dilatatis flabellatisque dichotomo-multifidis, subtus albis nudis hypothallo obsoleto; apotheciis minutis (0,3-0,4 millim. latis) lecanorinis, margine integro dein excluso, disco e rufo-fusco nigricante. Sporæ fusiformes, curvulæ, simplices, incolores, longit. 0,020-0,033^{mm}, crassit. 0,002-3^{mm}. Hypothecium pallidum. Paraphyses dein laxæ. — Rocks, Sonoma, and also in the Yosemite Valley, California, *Dr. H. N. Bolander*. Interior of the thallus compact; of elongated cells. Collogonidia solitary or concatenate; reaching 0,018^{mm}. in length by 0,009^{mm}. in width. Spores fusiform in the sense of Koerb. *Syst. t. 3, f. 5*; and they might be called short-acicular. Belongs to the same group with *P. flabellosa* (*Obs. Lich. l. c. 5, p. 401*) and *P. Petersii* (*Gen. Lich. p. 54*). The resemblance of the interior structure of *P. flabellosa* to that of the lichen before us has been well exhibited by Schwendener (*Erört. z. Gonidien-frage, Flora Ratisb. 1872, p. 227, t. 4*) in the infertile Yosemite specimens sent to him as "*Pannariæ affinis*." It appears quite impossible to remove these plants from *Pannaria*; or to continue to keep *Pterygium*, Nyl. apart from them in genus.

PANNARIA STENOPHYLLA, sp. nov.: thallo orbiculari zonatim centrifugo olivaceo, laciniis tereti-compressiusculis, centro squamuloso-diminutis delabentibus, ambitu radiantibus ramosis, subtus pallidis nudis hypothallo obsoleto; apotheciis lecanorinis perminutis (latit. 0,2-0,3 millim.) disco fusco margine tenui dein disparente. Sporæ ex ellipsoideo oblongæ, sæpe curvulæ, biloculares, longit. 0,012-20^{mm}, crassit. 0,003-5^{mm}. — Lime rocks, Moulton, Alabama, *Hon. T. M. Peters*, 1874. Thallus from a quarter to little more than half an inch in diameter. Structure of the interior of the thallus as in the last species; collogonidia in chains; at length 0,012-20^{mm}. long, and 0,010-12^{mm}. thick. The lichen grows with and often commingled with *P. Petersii*, from which it is readily distinguishable by its smaller size, lighter color both of thallus and fruit and terete lobes. *P. Sonomensis* is nearer, but exhibits a different habit of growth, and the spores are quite irreconcilable with those of the Alabama lichen.

SYNALISSA MELAMBOLA, sp. nov.: thallo effuso rimoso-areolato nigro, areolis planiusculis (latit. dein plusquam 1 millim.) stipitato-elevatis polycarpis; apotheciis (0,1-0,3 millim. latis) innatis lecanorinis disco subpapillato concolore marginem tenuem persistentem demum superante. Sporæ octonæ, ellipsoideæ, simplices, incolores, longit. 0,010-12^{mm}, crassit. 0,005-8^{mm}; paraphysibus omnino conglutinatiss. — Lime rocks, Alabama, *Hon. T. M. Peters*. Thallus cellulose; the collogonidia solitary. The reaction of the hymeneal gelatine with iodine is blue. Plant noticeable for its large, flattish, black areoles, which the lens shows to contain from two to six or more very minute but quite regular apothecia.

SYNALISSA VIRIDI-RUFA, sp. nov.: thallo effuso granuloso mox rimuloso-diffracto fusco-viridi; apotheciis (latit. 0,2-0,4 millim., visis) lecanorinis adnatis subplanis, disco rufo, margine subpersistente. Sporæ octonæ, ellipsoideæ, limbatae, incolores, longit. 0,016-18^{mm}, crassit. 0,008-10^{mm}; paraphyses conglutinatae. — Lime rocks, Texas, *C. Wright*. Structure not very different from that of the last; rounded, green cellules, with mostly solitary collogonidia, which reach a diameter of 12-15 mic. The reaction with iodine also as in the last. The lichen is marked among our species of this group by its rather brighter colors.

OMPHALARIA KANSANA, sp. nov.: thallo pulvinato coriaceo-cartilagineo atro e lobulis stipitatis erectis clavatis vel sublobatis vel fructu dilatato pileatis; apotheciis (0,5-0,8 millim. latis) terminalibus concoloribus mox convexis margine disparente. Sporæ — 12^{na} in thecis ventricosis, ex ellipsoideo dein ovoideo-oblongæ, medioque constrictæ, simplices (tenuiter demum uniseptatae?) incolores, longit. 0,005-8^{mm}, crassit. 0,003-4^{mm}, paraphysibus bene distinctis. — On lime rocks, Chase County, Kansas, *E. Hall*, 1871. Reaction with iodine, blue. Collogonidia mostly collected into small clusters of 3-5, amidst anastomosing filaments, which alone occupy the centre of the thallus: the structure of *O. corallodes* (Mass.) Nyl., with which the Kansas lichen appears best to agree generally. The two species differ from *OMPHALARIA PROPER*, as here understood (*Gen. Lich.* p. 81) with umbilicate thallus, in forming cushions of stalked lobes, which become more or less lobulate above. However ill exhibited this lobate or foliaceous character, it seems enough to give these plants a higher place in the system than that of *Synalissa symphorea*. The Kansas lichen is, so far as seen, a smaller species than the European with which it is above compared, and less evidently foliaceous. It is characterized at sight by its elevated convex apothecia, looking like nail-heads.

LEPTOGIUM RIVALE, sp. nov.: thallo membranaceo microphyllino

plumbeo, lobis imbricatis linearibus planis repandis; apotheciis (ostiolis indicatis) immersis. Sporæ octonæ, e fusiformi ovoideæ, biloculares, incolores, longit. 0,016-23^{mm}, crassit. 0,005-8^{mm}. Paraphyses parcæ. — “On small pebbles in the bottom of a clear brook around the Big Trees, Mariposa,” California (growing with and on *Hydrothyrja*, Russ.) Dr. Bolander. Lobes scarcely exceeding 0,5 millim. in width. Texture of the thallus parenchymatous throughout; an outer row of polygonous cells, distinguishable from the rounder and looser cells of the interior, indicating the *cortex* of the present genus. Collogonia solitary, or in very short chains. There is little in the lichen to remind one of the equivocal *Collema rivulare*, Ach., of Sweden, which yet agrees with the other in the very interesting points of an entirely cellulose texture and an aquatic habitat. The Californian plant was supposed to be infertile; but my friend Dr. Schwendener met accidentally with an immersed apothecium in a section of the thallus which he was examining, and I have since found such fruits to be indicated externally by a distinct ostiolar margin. Whether there is ever any further development or emergence of this apothecium is unknown. The small material before me gave no indication of lichenine with iodine.

PLACODIUM GALACTOPHYLLUM, sp. nov.: thallo crustaceo-adnato areolato-squamuloso ambitu lobato, farinoso lacteo, detrito fulvo; apotheciis (latit. 0,5-0,9 millim.) zeorinis sessilibus planis disco aurantiaco tenuiter marginato. Sporæ octonæ, polari-biloculares, incolores, longit. 0,008-14^{mm}, crassit. 0,004-6^{mm}. Tuckerm. *Gen. Lich.* p. 108. — On lime rocks, Chase Co., Kansas, *E. Hall*, 1871. A distinctly lobed lichen with the habit of *Lecanora nutralis* v. *albo-pulverulenta*, Schær. (*Lich. Helv.* n. 334) and differing in this respect from even the best condition of the European *P. erythrocarpum*; the spores of which are also larger, and not rarely measure, in my specimens $\frac{18}{10} - \frac{23}{10}$ mic. Apothecium of our lichen distinctly lecanorine, with marginate disk.

PLACODIUM FERRUGINOSUM, sp. nov.: thallo crustaceo rimoso-areolato aurantiaco, areolis subinde lobulatis, hypothallo nigro; apotheciis (latit. 0,6-0,9 millim.) biatorinis sessilibus ferrugineis (nigricantibusque) margine demum flexuoso. Sporæ octonæ, polari-biloculares, incolores, longit. 0,016-21^{mm}, crassit. 0,006-9^{mm}. — Volcanic rocks, Island of Chiloe, Chili, Dr. T. Hill (Hassler exp. 1872). Almost *P. cinnabarinum*, as respects the thallus, but with the apothecia almost of *P. ferrugineum*.

PLACODIUM FERRUGINEUM (Huds.) Hepp, * MINIACEUM; apotheciis miniatis. — On bushes, Cape of Good Hope, *C. Wright*. The appressed apothecia differing only, but remarkably, in color, from Cape specimens of *P. ferrugineum* (*Drege* in herb. Sonder; *Wright*), which are undistinguishable from the northern lichen.

PLACODIUM ATROALBUM; thallo tenui granuloso dein et rimoso-areolato luteolo-fuscescente; apotheciis (latit. c. 0,3-0,5 mm.) adnatis zeorinis, margine thallino tenui demisso integro albo discum marginatum nigrum nudum cingente, intus incoloribus. Sporæ octonæ, ellipsoideæ, polari-biloculares sporobl. approximatis, longit. 0,014-23^{mm}, crassit. 0,005-9^{mm}, paraphysibus filiformibus fusco-capitulatis demum distinctis articulatisque. — On cretaceous sandstone and chalcedony, North Platte, Rocky Mountains, *Dr. Hayden*. Lime rocks, Utah, *Mr. Lapham*. Of the stock of *P. variabile* (Pers.) Nyl., which occurs with well-marked distinctness from this in the same region; and closely associable with the *P. Agardhianum* of Anz. *Lich. Langob.* n. 37. But our lichen is scarcely as well comparable with the *P. Agardhianum* of Hepp (*Lich. exs.* n. 407), and differs still more from the specimen before me of *Pyrenodesmia Agardhiana*, Mass. (Arn. in herb. Koerb.), which is wholly lecideoid. This last is represented here by a lichen of the Alabama lime rocks (*Judge Peters*). If all these be to be taken for states of the same *variable* species, our Rocky Mountain lichen above described is, with little doubt, another. The polar type is not easily made out in the spores of the latter; which, but for the other structure of the hymenium, might be supposed rather a *Lecanora* akin to *L. erysibe* (Ach.), Nyl. There are no reactions of the thallus with potash or chloride of lime.

LECANORA SEMITENSIS, sub-sp. nov.: thallo e squamulis glebosis stramineis mox crenato-lobatis subinde hypothallo nigro marginatis; apotheciis (0^{mm}, 7-1^{mm}. latis) appressis plano-convexis tumentibusque congestis, disco livido-fuscescente albido-pruinoso, margine demum subgranulato vel excluso. Hypothecium incolor. Sporæ octonæ ellipsoideæ simplices incolores, longit. 0,011-16^{mm}, crassit. 0,005-6^{mm}. — Granitic rocks, Yosemite Valley, California, *Dr. Bolander*. Clearly a member of the *Saxicola* group, and very close to *L. saxicola v. diffracta*, from which (largely exhibited on the Californian rocks) the present differs in its scaly thallus, which is not radiant, and the ultimate development of its fruit.

LECANORA GLAUCOVIRENS, sp. nov.: thallo crustaceo orbiculari verruculoso-granulato viridi-glauescente versus ambitum albido, hypothallo incolore; apotheciis (latit. 0^{mm}, 7-1^{mm}.) appressis, disco mox convexo e livido-fusco nigrescente, margine integerrimo. Hypothecium pallidum. Sporæ octonæ, ellipsoideæ, simplices, incolores, longit. 0,014-17^{mm}, crassit. 0,006-9, paraphysibus conglutinatis. Spermatia acicularia arcuata.

On bark, Galapagos Islands, South America, *Rev. T. Hill* (Hassler

Exp.). Of the stock of *L. subfusca*, but with rather the habit of conditions of *Rinodina sophodes*. Patches about an inch in diameter.

LECANORA DENTILABRA, sp. nov. : thallo crustaceo tenui areolato-verrucoso glaucescente; apotheciis (latit. 0^{mm}, 5-0^{mm}, 9) adnatis, margine tumidulo mox fisso-subcrenato, disco fusco opaco plano vel demum tumente marginemque excludente. Hypothecium incolor. Sporæ octonæ, ellipsoideæ, simplices, incolores, longit. 0,012-25^{mm}, crassit. 0,010-16^{mm}, paraphysibus conglutinatiss.

On bark, Island of Chiloe, Chili, and at Sandy Point, Straits of Magellan, *Rev. T. Hill* (Hassler exp.). Without doubt also of the *subfusca* stock, the apothecia being characterized much as those of the rupicoline *L. cæcio-alba*, Koerb., of Europe.

LECANORA OROSTHEA (Sm. *L. expallens*, Ach.) var. JAPONICA; apotheciis (latit. 2-3 millim.) elevato-sessilibus flexuoso-lobatis; sporis longit. 0,020-23^{mm}, crassit. 0,008-14^{mm}.—On beech-trunks in the mountains near Hakodadi, Japan, *C. Wright* (U. S. N. Pac. Exp.). Closely associable with our luxuriant North American condition of *L. orosthea*, but differs in the development of the apothecia and the larger spores, which I have only seen in 4" and 6", in the thekes. *L. orosthea* perhaps deserves the rank of a sub-species under *L. varia*.

LECANORA FRANCISCANA; thallo verruculoso-granuloso albo-cinerascente; apotheciis (latit. 0,7-1,5 mm.) pseudo-biatorinis liberis e fusco-rufo nigris mox convexis turgidisque marginem concolorem excludentibus. Hypothecium subduplex, superius incolor, inferius crassiusque fuscescens; strato gonimo impositum. Sporæ octonæ, ex ellipsoideo mox oblongæ, biloculares, incolores, longit. 0,013-23^{mm}, crassit. 0,003-5^{mm}, paraphysibus coalitis.—On sandstone, San Francisco, Cal., *Dr. Bolander*. A sub-species probably of *L. erysibe* (Ach.) Nyl. Apothecia with the aspect of a *Lecidea* not very unlike a condition of *L. enteroleuca*, Ach., of the same rocks, but really biatorine, except that the hypothecium rests on the gonimous layer. The reaction of the hymeneal gelatine with iodine is blue.

RINODINA RADIATA: thallo crustaceo rimoso-areolato ambitu radioso-lobato glaucescente, hypothallo nigro; apotheciis (latit. 0,3-0,7 mm.) innatis dein emergentibus, disco plano-convexo tumidove nigro albo-pruinoso, margine thallino integro demum disparente. Hypothecium fusco-nigrum. Sporæ octonæ, brevi-ellipsoideæ obtusæ, biloculares, fuscæ, longit. 0,007-12^{mm}, crassit. 0,005-7^{mm}, paraphysibus conglutinatiss.—*Buellia radiata*, Mihi in Lich. Calif. p. 25.

b, thallo depauperato hypothallo radiante subfimbriato. Rocks on the coast of California, *Bolander*. Referred to *Buellia* at the place

cited, notwithstanding the now clear thalline border, on account of the black hypothecium, and the evident resemblance to *B. albo-atra*. But *Rinodina* makes many approaches to *Buellia*, and the color of the hypothecium proves to be an insufficient criterion. Nylander, indeed (*Obs. Pyren.* p. 52) has referred *Buellia albo-atra* to the group now before us; the reference being, however, determined by the presence of truly jointed sterigmas. I have been unable myself as yet to find multi-articulate sterigmas in the specimens examined of this species, or of that described above, but what might rather be taken for sub-simple forms of the organ in question occur sometimes with a few swollen joints. As originally observed, this lichen appeared comparable rather, as respects thallus, with such effigurate ones as *Lecanora circinata*; but the best developed plant (San Diego, *Herb Willey*) has a lacinate circumference like that of *Placodium candicans*; while on the other hand depauperate conditions occur with no trace of a lobulate margin.

RINODINA THYSANOTA, sp. nov.: thallo crustaceo verrucoso ambitu radiosio-lobato fusco-olivaceo; apotheciis (qu. visis 0,5-0,7 mm. latis) lecanorinis sessilibus, margine tumidulo integro discum nigro-fusum cingente. Hypothecium pallidum. Sporæ octonæ, brevi-ellipsoideæ, biloculares, fuscæ, longit. 0,010-14^{mm}, crassit. 0,005-6^{mm}.

Rocks, alt. 7,000 feet, in Alpine County, California, *J. A. Lapham*. Thallus, in the single specimen, differenced much as in *R. oreina*. Reaction of the hymeneal gelatine with iodine, blue.

RINODINA MAMILLANA, Tuckerm. Lich. Hawai. in Proceed. Amer. Acad., 7, p. 226, has been collected more recently in the Galapagos Islands, *Rev. T. Hill* (Hassler exp.). Apothecia of both lichens similar in size (0,3-0,8^{mm}. wide), but the specimens of that from the Galapagos not exhibiting the peculiar protuberance and plaiting of the disk which suggested the specific name, and their thalline margin at length blackening. Hypothecium in both blackish-brown. Spores, 0,012-20^{mm}. long and 0,005-10^{mm}. thick; the paraphyses at length distinct. Thallus higher- or sulphur-colored in the South American plant.

RINODINA OCHROTIS: thallo crustaceo granuloso mox fatiscente furfuraceo albido; apotheciis (qu. visis circ. 0,5 mm. latis) lecanorinis sessilibus, disco e livido-carneo fuscescente, margine obtuso integro. Hypothecium pallidum. Sporæ parvæ, obtuse ellipsoideæ, biloculares, fuscæ, diam. 2-3° longiores. — *Lecanora, Mihi* in *Wright Lich. Cub.* n. 115.

On charred surfaces of logs, Monte Verde, Island of Cuba, *C. Wright*. The description was reserved in hope of other specimens being sent. In the absence of such, I can now add nothing to the above.

RINODINA MILLIARIA, sp. nov.: thallo crustaceo tenui verruculoso viridi-fuscescente; apotheciis perminutis (latit. circa 0,2-0,4 mm.) adnatis lecanorinis, disco fusco-nigro opaco plano-convexo, margine tenui integro dein nigricante vel excluso. Hypothecium fusco-nigrum. Sporæ octonæ, obtuse ellipsoideæ, biloculares, fuscæ, longit. 0,009-15^{mm}, crassit. 0,005-8^{mm}, paraphysibus demum distinctis, fusco-capitulatis.

A common bark-lichen about Boston, and found also at New Bedford, *H. Willey*; and in Western New York, *Miss Wilson*. It is differenced from ordinary *R. sophodes* v. *exigua* by its blackened hypothecium, — a character, in this place, of some interest. The spores occur now in twelves according to Mr. Willey, a variation like the well-known one in the v. *exigua* (constituting *R. polyspora*, Th. Fr.). But our lichen is also curious as seeming to exhibit filiform, bowed spermatia (0,012-20^{mm} long) on simple sterigmas. This observation has been made repeatedly both by Mr. Willey and myself, and we are unable to refer the black, papillæform spermogones and contents in question to any other lichen than the one upon whose thallus they occur, though it appears quite inadmissible, in present knowledge, that they can belong to it.

PERTUSARIA THAMNOPLACA, sp. nov.: thallo fruticuloso cartilagineo appresso dichotomo-ramoso albido-fuscescente, ramis subteretibus papillato-verrucosis subtus albis fibrillis sparsis concoloribus; apotheciis depresso-globosis monothalamis mox papillato-coronatis (latit. dein 1 mm.) ostiolo punctiformi nigro. Sporæ octonæ, ellipsoideæ, simplices, incolores, longit. 0,050-72^{mm}, crassit. 0,023-38^{mm}.

Trunks, Sholl Bay, near the western entrance of the Straits of Magellan, growing with and often on the next, *Rev. T. Hill* (Hassler exp. 1872). Another illustration of the fruticulose thallus in a properly crustaceous group; and more remarkable than either of those described from our own Pacific coast (*Lich. Calif. in loc.*). Thallus (reaching a diameter of more than two inches) closely appressed and affixed by its fibrils to the matrix, dichotomously much branched, either terete or now a little compressed, and in the larger parts almost attaining a thickness of one millimetre. The whole is besprinkled, at length densely, with crowded papillæ, which surround the apothecia with one or more coronals, and hide often, to a considerable degree, the branches. Under the microscope, the direction of the very minute and confused network of filaments which makes up the interior of the thallus is seen to be on the whole longitudinal.

PERTUSARIA COLOBINA: thallo crustaceo uniformi papillifero, papillis dein confertis, centralibusque subelevatis; apotheciis ab iis *P. tham-*

noplacæ vix distinguendis nisi sporis minoribus longit. circ. 0,046-56^{mm}, crassit. 0,023-26^{mm}.

With the last, at Sholl Bay, and also, on bark, in the Galapagos Islands, *Rev. T. Hill* (Hassler exp. 1872). The material does not enable me to explain the true relation of this lichen to that immediately preceding. With so much agreement in the fruit, the differences in the thallus are startling; while yet specimens of each, well covered with papillæ, may be supposed at sight the same.

PERTUSARIA AMBIGENS: thallo cartilagineo lævigato subinde rugoso-verrucoso glaucescente; apotheciis lecanorinis (latit. 0,6-1,8^{mm}.) sessilibus vel subelevatis 1-2-thalamis, margine thallino lacero-subcrenato demum repetito-duplicato discum planum viridi-cæsiū cingente. Sporæ octonæ, ellipsoideæ, simplices, incolores, 0,017-23^{mm}, longæ, 0,008-12^{mm}. crassæ; paraphysibus capillaribus. *Lecanora ambigens*, Nyl. *Enum. Gén. Lich.* p. 113, and *Prodr. Fl. Nov. Granat.* p. 40, not.

On trunks, Oregon, at 49° N. lat., *Dr. Lyall*; and elsewhere in the same country, *E. Hall*. The lichen does not differ from a Cape of Good Hope plant (*Zeyher in herb. Sonder*), also on bark, which is, without doubt, what Nylander has described (*Prodr. N. Granat.*) from the same herbarium. And, so far as appears, it fully agrees also with a rock lichen collected by Mr. Wright at the Cape, and long since determined by Nylander as his *Lecanora ambigens*. The spore-features vary somewhat from the *Pertusaria* type, and appear to have influenced the first describer in excluding the lichen from the genus to which, however, he admits that it perhaps rather belongs. I can entertain no doubt of this. Nothing illustrates so well the very peculiar differentiation of the apothecia as forms associable more or less closely with *Pertusaria velata*; and specimens of *P. velata* * *multipuncta* are before me which are hardly, at first sight, distinguishable but by the spores. These apothecia (in the Oregon plant) present at length much the appearance in small of a pile of plates; the margin of the elevated apothecium gaping horizontally into two, three, or more margins. Spores enveloped in a halo in both the American and African lichens. The spores of ours agree very well in size with my measurements of the African (*herb. Sonder*), but Nylander (l. c.) gives rather larger figures, or 0,023-30^{mm}. longit. and 0,010-11^{mm}. crassit.

PERTUSARIA FLAVICUNDA, sp. nov.: thallo cartilagineo lævigato verrucoso-areolato pallide sulphureo, areolis ambitus radiose subconcre-scentibus; apotheciis depresso-globosis (latit. 1-1,5 mm.) monothalamis, ostiolo mox dilatato hymenium nigricantem pulvere lutulento adpersum

exhibente. Sporæ 2-3^{mæ} in thecis, ellipsoideæ, simplices, incolores, 0,060-80^{mm}. longis, 0,040-50^{mm}. crassis.

Rocks, San Diego, California, *Dr. J. G. Cooper*; and received, also, in excellent condition from other collectors (*Herb. Willey*).

PERTUSARIA EUGLYPTA, sp. nov.: thallo cartilagineo insculptorimoso glauco-cinerascente; apotheciis sub-globosis (latit. 1-1,8 mm.) pleiothalamis, circum ostiola punctiformia nigra depressis. Sporæ 3-6^{mæ}, ellipsoideæ, simplices, incolores, longit. 0,092-138^{mm}, crassit. 0,040-60^{mm}.

Granitic rocks, Cape of Good Hope, *C. Wright*. Comparable with states of *P. communis*, Auct. (*pertusa* (L.) Ach.), but differing in the spores, and in its elegantly sculptured crust, which reminds one of a cuneiform inscription.

PERTUSARIA ALBINEA, sp. nov.: thallo tenui rimuloso-areolato lacteo lineis nigris decussato; apotheciis depresso-hemisphæricis deplanatisque pleiothalamis (latit. 0,5-0,8 mm.) ostiolis minimis punctiformibus nigris. Sporæ octonæ, ellipsoideæ, simplices, incolores, longit. 0,043-58^{mm}, crassit. 0,023-40^{mm}.

On bark, Galapagos Islands, *Rev. T. Hill* (Hassler exp. 1872). Distinguishable from *P. leioplaca* by habit, and the smallness of its parts.

THELOTREMA CALIFORNICUM, sp. nov.: thallo subtartareo verruculoso pallide ochroleuco; apotheciis lecanoroideis (longit. 0,3-0,7 mm.) adnatis sub-planis, excipulo exteriori margine obtuso integerrimo thallino discum nigrum velo margine concolore perforato subvestitum includente, demum flexuoso-irregularibus stellatis lirellatisque. Sporæ octonæ, ex ellipsoideo dactyloideæ, 4-8-loculares, loculis integris, fuscæ, longit. 0,020-30^{mm}, crassit. 0,005-8^{mm}.

On bark, San Diego, California, *Dr. E. Palmer* (*Herb. Willey*). The whole of the interior of the disk is black, without distinguishable proper margin, and the general aspect is that of *Lecanora*; but the spores, and the crustaceous veil, which is more or less exhibited, appear to associate the lichen with *Thelotrema*, though I know of no species to compare it with. Apothecia now suggesting those of *Chiodection sphærale*. There is no reaction of the hymeneal gelatine with iodine; nor of the thalline tissues with liquor potassæ or hypochlorite of lime.

PILOPHORUS ACICULARIS (Ach.) Tuckerm. *Gen.* p. 146, f. HALLII; apotheciis elongatis (longit. 2-4 mm., crassit. 0,5 mm. — 1 mm.) pistiliformibus. — On rocks, Cascade Mountains, Oregon, *E. Hall*. The apothecia of *Pilophorus* pass from a globular, often depressed figure, as in f. *Fibula*, into a slightly conical one, like an elevated skull-cap (πίλος), as in the original f. *acicularis*. And the last is lengthened in the present so as to resemble a pestle. As compared with the other

forms, the podetia of this are short and stout, the whole length scarcely exceeding, in the specimens, thrice that of the longest apothecia. Spores of the species, 0,016-23^{mm}. long and 0,007-8^{mm}. thick. — All the known forms of *Pilophorus* fall readily under one species; there are no satisfactory characters to distinguish them. But it is more difficult to follow Dr. Th. Fries in his recent reference hither (*Lich. Scand.* p. 55) of one of the two states of his *Stereocaulon cereolinum*, *Monog. Stereoc.* p. 40, which is otherwise universally recognized as a *Stereocaulon*; and, as he says, is only with extreme difficulty ("ægerrime," *Lich. Scand.* l. c.) distinguishable from the other form. The "good" figure of Ach. *Meth.*, of the fertile condition of *S. cereolus*, is not cited in this reference of the plant to *Pilophorus*. It is surprising, if Acharius really had *Pilophorus fibula* in fruit, before him, when he described his *Stereoc. cereolus*, that he should not at once have recognized the resemblance of the former to his *Cladonia acicularis*. Such mistake could hardly occur here, where the *Pilophorus* is scarcely known but as fertile, and the somewhat similar, commonly sterile, often subsimple lichen, with powdery heads, is most readily and often certainly referable to the *Stereocaulon*.*

BIATORA CAULOPHYLLA, sp. nov.: thallo e lobulis stipitiformi-erectis compressis sursum dilatatis lobatisque griseo-virescentibus in crustam plicatam subinde albo-farinosam stipatis; apotheciis mediocribus (dein et 2 mm. latis) margine obtuso mox livescenti-nigro discum planum rufo-fuscum nigrumque cingente. Sporæ octonæ, ovoideo-ellipsoideæ, simplices, incolores, longit. 0,007-13^{mm}., crassit. 0,004-6^{mm}., paraphysibus conglutinatis. — On rocks, mountains of California, *Dr. Bolander*. The erect lobes are at length 5-7 mm. long, and, in their widest portions, 2-3 mm. wide. This is a pronounced exhibition in the squamulose *Biatoræ* of the extraordinary modification of thallus in *Lecidea vesicularis* (Hoffm.), Ach., and *L. conglomerata*, Ach. As in *Lecanora thamnoplaca*, Tuckerm. (*Gen. Lich.* p. 113) the stipitate lobes of the lichen before us are comparable, in fact, with those of *L. rubina*, v. *complicata* (Anz. *Lich. Ital.* p. 158), the type of which is an almost foliaceous, and in every way distinguished representative of the crustaceous thallus. And, as with the *Lecideæ* just named, there is no species to which our *Biatora* should be referable as a sub-caulescent overgrowth. But this is scarcely as clear in the case of some other stipitate-lobate lichens: *L. thamnina*, noticed in *Gen. Lich.* p. 120, being probably inseparable from luxuriant Californian conditions of *L. cervina* b. *squa-*

* In the above cited *Gen. Lich.* p. 146, note, the spores of the f. *robustus* should be said to be 0,016-23^{mm}. long.

mulosa, Fr., and *Lecidea caulescens*, Anz. (*Lich. Langob.* n. 139) as close, in all respects, to *L. squalida* (Schleich.) Ach. Curious as it is then, too much stress should perhaps not be laid on the systematic value of the thallus we have been considering.

BIATORA PETRI, sp. nov.: thallo e squamis membranaceo-cartilagineis ex orbiculato-oblongo-diformibus undulato-lobatis subimbricatis glauco-cinerascentibus (fuscescentibus) subtus ambituque ascendente mox fuscis; apotheciis marginalibus sessilibus nitidis (latit. 1-2 mm.) disco subplano rufo (nigro) margine flexuoso nigro demum excluso. Sporæ octonæ, ovoideo-ellipsoideæ, simplices, incolores, longit. 0,009-11^{mm}, crassit. 0,004-5^{mm}, paraphysibus coalitis.

On lime and other rocks, growing over mosses, Moulton, Alabama; *Hon. T. M. Peters*. The smooth scales at length reticulately rimulose, as common especially in *B. globifera* (Ach.), Fr.; but the lichen is readily distinguished from the species named, as from *B. Russellii* and *B. luridella* of these papers, by the colors, and the thinness of the loosely aggregated thallus.

BIATORA CARNULENTA, sp. nov.: thallo obsoleto; apotheciis parvis (latit. 0,3-0,6 mm.) adnatis convexis ex albido livescenti-carneolis, margine perquam tenui demisso obscurato vel sæpius evanido. Hypothecium incolor. Sporæ octonæ, ovoideo-ellipsoideæ, simplices, incolores, longit. 0,007-12^{mm}, crassit. 0,003-5^{mm}, paraphysibus conglutinatis. — Dead, soft wood in the White Mountains. Found also on the same substrate at Geneseo, N. Y., *H. Willey*. Reaction of the hymeneal gelatine with iodine, blue.

BIATORA PELIASPIS, sp. nov.: thallo tenuissimo albido vel obsoleto; apotheciis parvis (latit. 0,3-0,6 mm.) sessilibus subplanis, disco livido-fuscescente pruinato, margine tenui nigro disparente. Hypothecium fusco-nigrum. Sporæ ellipsoideæ, simplices, incolores, longit. 0,005-11 mm., crassit. 0,003-5 mm., paraphysibus conglutinatis. — On dead, soft wood, South Carolina, *H. W. Ravenel*, &c.; Massachusetts, *H. Willey*. Very close to this is a minute lichen (*B. peliaspistes*, *Mihi herb.*) found by me on living hemlock trunks, with leprous-granulose, white thallus; and on dead, soft wood, without thallus, in the White Mountains, in which the apothecia are always naked, and the spores rather smaller (0,005-11 mm. long, and 0,0025-35 mm. thick) and oblong. Both lichens long represented with me the old "*Biatora anomala*" of authors. Both exhibit with iodine the same blue reaction.

BIATORA GLAUCONIGRANS, sp. nov.: thallo granuloso glaucescente; apotheciis (latit. 0,2-0,5 mm.) sessilibus mox convexis e livido-fusco

nigris, margine tenuissimo demisso mox nigricante vel evanido. Hypothecium nigrum. Sporæ octonæ, ex ellipsoideo oblongæ, biloculares, incolores, longit. 0,009-15^{mm}, crassit. 0,003-4^{mm}, paraphysibus coalitis. — On the bark of white pine, New Bedford, Mass., *Mr. Willey*. The well-developed crust, the hypothecium, and the paraphyses distinguish this from *B. lenticularis* (Ach.), &c.

BIATORA LIVIDO-NIGRICANS, sp. nov.: thallo e granulis cartilagineis discretis livido-glaucescentibus; apotheciis minutis (latit. 0,2-0,4 mm.) sessilibus plavis tenuiter marginatis fusco-nigris. Hypothecium pallidum. Sporæ octonæ, dactyloideæ et oblongæ, 4-5-loculares, incolores, longit. 0,015-23^{mm}, crassit. 0,003-6^{mm}, paraphysibus distinctis, capitulatis. — On bark, Sandy Point, Straits of Magellan, *Rev. T. Hill* (Hassler exp. 1872). Specimen a very small one, but the characters sufficient to distinguish the lichen from *Lecidea sororiella*, Nyl., of New Grenada (Lindig *exs.* n. 2838) as from the Australian *L. livido-fusca*, Nyl. (*Syn. N. Caled.* p. 42, not.) and *L. livido-fuscescens*, Nyl., of Brazil (*Flora*, 1869, p. 122), all of which are taken by their author to relate nearly to *Biatora trachona*, Flot. With iodine a vinous tint is exhibited by the hymeneal gelatine of the antarctic lichen, following a bluish.

LECIDEA MAMILLANA, sp. nov.: thallo squamaceo-areolato viridiglaescente (cinerascente aut dealbato) areolis mox turgescentibus radiatimque striatulis ambitu sublobatis, discretis vel dein aggregatis; apotheciis in areolis innatis centralibus minutis (latit. 0,3-0,7 mm.) plano-convexis nudis margine tenui evanido. Hypothecium fuscum. Sporæ octonæ, ellipsoideæ, simplices, incolores, longit. 0,009-18^{mm}, crassit. 0,005-9^{mm}, paraphysibus conglutinatis. Spermatia minuta, recta, in sterigmatibus simpliciusculis. — On lime rocks, Alabama, *Judge Peters*. Suggests *L. mammillaris* (Gouan) Duf., of the south of Europe; but the areoles, for the most part, are little more than a quarter of the size of those of the European lichen. They occur now in a reduced, glebous state, which is quite smooth, glaucescent, and finally crowded into a close crust; but are more commonly discrete, when the effigurate margin is manifest, the color often darkens, and the surface is at length prettily marked with striæ radiating from the apothecium, instead of becoming cancellated, as in the foreign plant. As seen in section, no important differences are observed in the internal structure of the apothecium of our lichen from that of *L. mammillaris*, though the thinner hypothecium of ours is possibly also paler. I cannot recognize in either the distinctly twofold hypothecium sometimes attributed to this group of *Lecideæ*.

LECIDEA PSEPHOTA, sp. nov.: thallo areolato albo, areolis minutis tumidulis discretis, hypothallo nigro; apotheciis perminutis (latit. 0,2-0,4 mm.) areolis plerumque immixtis e concavo planis margine tenui incurvo persistente, sæpe anguloso-diformibus. Hypothecium nigrum. Sporæ in thecis ventricosis octonæ, ellipsoideæ, simplices, incolores, longit. 0,012-20^{mm}, crassit. 0,007-10^{mm}, paraphysibus concretis. — On granite rocks, shores of Straits of Magellan, accompanying (in the specimen) *Buellia petræa* b. *vulgaris* and *B. geographica*, *Rev. T. Hill* (Hassler exp. 1872). The lichen itself not a little resembles *B. stellulata* (Tayl.).

LECIDEA TESSELLINA, sp. nov.: thallo rimoso-areolato glaucescente (cinerascente vel dein sublutescente) areolis planis lævigatisque (rarius turgidis) hypothallo atro subinde marginatis; apotheciis minutis (latit. 0,3-07 mm.) areolis immersis e concavo mox planis nudis, margine tenui acuto subpersistente, demum confluenti-diformibus. Hypothecium incolor. Sporæ octonæ, ellipsoideæ, simplices, incolores, longit. 0,009-14^{mm}, crassit. 0,005-7^{mm}, paraphysibus coalitis. — Common on various rocks throughout the Appalachian range, and observed also westward, in Kansas and Missouri, by *E. Hall*. A well-marked lichen, which I long tried to consider a lecideoid *Lecanora* (§ *Aspicilia*), with which group it accords, moreover, in its spermogones and staff-shaped spermatia on subsimple sterigmas. The reaction of the thallus with $\frac{K}{I}$ is yellow (becoming in time reddish), and that of the hymeneal gelatine with iodiue, blue.

LECIDEA CYRTIDIA, sp. nov.: thallo effuso tenuissimo leproso olivaceo-virente; apotheciis perminutis (latit. 0,2-0,4 mm.) appressis mox convexis immarginatisque. Hypothecium nigrum. Sporæ 6-8^{nm} ovoideo-ellipsoideæ, simplices nebulosæ vel pseudo-biloculares, incolores, longit. 0,006-10^{mm}, crassit. 0,0025-45^{mm}, paraphysibus coalitis. — On sandstone, Missouri, *E. Hall*; Pebbles, Quincy, Mass., *H. Willey*. A very humble, but yet marked, lichen.

APPENDIX.

KERGUELEN LICHENS. A brief notice of lichens collected in Kerguelen's Land by Dr. Kidder, Naturalist of the United States Transit Expedition in 1874-75, as of a few others gathered previously in the same island by Dr. Hooker, and now preserved in the late Dr. Thomas Taylor's herbarium (Herb. Bost. Soc. Nat. Hist.), was prepared and published by the present writer in the Bulletin of the Torrey Bot. Club, Vol. VI. No. 10 (Oct. 1875). In the November following, a note on "New Lichens from Kerguelen Land," collected by the Rev.

A. E. Eaton, of the British Transit Expedition, and determined by Dr. Nylander, was published by the Rev. J. M. Crombie in the "Journal of Botany," and was followed by a full enumeration of Mr. Eaton's lichens by the same gentleman, with the same assistance, in the "Journal of the London Linnæan Society, Vol. XV. ; as now, at length, by a "Revision of the Kerguelen Lichens collected by Dr. Hooker," in the "Journal of Botany," for April, 1877. The naturalist of the British expedition had much better luck in collecting, amid the countless discouragements of the "island of desolation," or was less embarrassed by other and higher branches of natural history, than ours ; and Messrs. Nylander and Crombie have thus been able to largely extend this curious lichen-flora ; while a comparison with Dr. Hooker's specimens (very few, indeed, of which could be discovered in the herbarium of Dr. Taylor) has enabled them to determine some of the latter writer's new species, for the determination of which his own descriptions were entirely inadequate. There is also something over a page, in Mr. Crombie's last paper, of observations on the present writer's list of Kerguelen lichens above mentioned, upon which it will be proper to make some remarks.

And first as to what is called the unfortunate "neglect of the chemical reactions," which, it is said, renders the "diagnosis incomplete, and so far uncertain." This is simply a matter of opinion. I studied the question of the use of certain chemicals in the systematic investigation of lichens, with such care as I could give it, ten years ago, and have since seen no reason to change the view then expressed (Amer. Naturalist, April, 1868). The application to the lichen-tissues of the tests used is not without interest, and may give results of some utility, *so far at least as they go* ; but this *quantum videtur* impedes every stage of the inquiry, and the unequivocal value assumed for the results has never been any thing but an assumption. And opinions may also differ as to the value of the chemical "species" which have resulted from the "reactions." Dr. Nylander has remarked of one of these species, his *Parmelia cetrarioides*, that it scarcely differs from another except chemically, — "*vix differt nisi reactione. . . . a P. olivetorum : at distinguenda est nomine proprio, jam eam ob causam*" (Nyl. Obs. Lich. Pyr. Orient. p. 16), and his remark is applicable to not a few others, whether or not now appearing to be supported by secondary lichen-characters. I decline, for my part, to receive such species. And there can be no doubt that the tendency of this scrutiny of "the reactions," as of another now far from unknown method of study, — the scrutiny, that is, of minute and not seldom unimportant differences of all sorts, to the ignoring, for

the time at least (whatever may be intended in the future), of the more difficult and important consideration in full of the points of agreement with known forms, — is simply to minimize the value of species; and can have but one result, and that only a disastrous one, on the future of Lichenology.

Usnea sulphurea (Müll.), Th. Fr., is the same certainly as *Neuropogon melaxanthus* (Ach.) Nyl. But it is not questioned that the lichen named is indigenous to both the Arctic and Antarctic zones, and was first published from the former under the name first cited above. The fact that the Arctic condition is less luxuriant than the other can make no difference in the application of the universally recognized rule of nomenclature, which overrides individual preferences, and is intended to. But my reviewer continues that "Tuckerman also seems to imply that *Neuropogon Taylora* (Hook. fil.) cannot rightly be discriminated from the preceding." It was, perhaps, rather more than implied. Having, for many years, been in receipt of specimens of the yellow *Usnea* of the polar regions, especially of the antarctic forms, it became a matter of some interest to me to determine the *U. Taylora*, considered (it should appear) by Dr. Taylor to take the place, in Kerguelen's Land, of the older species; but not likely to be restricted to the island. The endeavor was in vain, and even in Dr. Kidder's large Kerguelen collection there was nothing that appeared separable from the plant of the Falkland Islands, as there was nothing in either Taylor's or Nylander's diagnosis of *U. Taylora* satisfactorily to distinguish it.

Pannaria Taylora, Tuckerm. *ubi sup.*, Oct. 1875, which was described from a specimen without name in the Taylor herbarium, is the same, it fully appears, as the *P. placodiopsis*, Nyl., of the "Journal of Botany," of November of the same year. But Mr. Crombie is now able to show, from Dr. Hooker's specimen, that the lichen is *Lecanora dichroa*, Tayl., which would hardly be guessed from the description. That certainly seems to indicate an areolate, only sub-effigurate plant, of much the type of *Lecanora gelida*; and by no means this marked *Pannaria*.

"*Pannaria glauccella*, Tuck., sp. n. = *Amphidium molybdoplacum*, Nyl." I cite this definite statement as it stands in Mr. Crombie's paper. It seems, however, from the evidence of the same gentleman, that there is no doubt at all that the plant is new; or that it was published by one writer, under the specific name *glauccella* in October, and by another under that of *molybdoplaca*, in the following November. This should appear to settle the name of the species; but what of the genus, and where is it defined? The only reference to it that I can discover is in

Dr. Nylander's *Obs. Lich. in Pyren.* 1873, p. 48, where a "*Leptogium* (*Amphidium*) *terrenum*" is described, and the remark immediately follows, that this new *Leptogium* of the new section *Amphidium* is really to be taken for a new genus, — "*genus novum quoad thallum, quasi Pannaria . . . sed sporæ solitæ Leptogii . . . Genus Amphidium nondum satis cognitum.*" But the *Amphidium* of Kerguelen's Land differs considerably from the Pyrenean one, and the proposed genus seems as far from establishment as ever. In his full diagnosis of the species in Mr. Crombie's "Enumeration of Kerguelen Lichens," cited above, Dr. Nylander compares it with *Pannaria elæina*. I must still consider the affinity of the plant *Pannariine* and not *Collemeine*, and continue to call it *Pannaria glauccella*.

Placodium bicolor, Tuckerm. *ubi sup.*, is, without doubt, correctly referred by Messrs. Nylander and Crombie to *Lecanora gelida*, v. *lateritia*, Nyl. I had myself remarked that my plant was the same with the red *L. gelida* of Taylor's herbarium, upon which, doubtless, Nylander founded his *Squamaria luteritia* (*Enum. Gén. Lich.*), but the color suggested *Placodium*, and the spores seemed to look the same way. The polar-bilocular type (which is hardly well named "placodiomorphous") is, indeed, a very distinct one; but its exhibition in nature, if we limit groups rather by the sum of their characters than by any particular character, is now far enough from distinct.

"*Urceolina Kergueliensis* *, Tuck., *n. gen. & sp.* = *Lecanora Kerguelensis* (Tuck.)." I cite once more from Mr. Crombie's revision; and can but repeat here, in reply to Dr. Nylander's criticism, what I said at first: "the lichen is not referable to *Lecanora* § *Aspicilia*, and is excluded by its exciple from § *Squamaria*;" as, of course, from the section represented by *L. subfusca*. The apothecium certainly carries the plant into the *Urceolarieæ*, as these have been understood, and is irreconcilable with the *Lecanorine* type. It is true that Nylander has not recognized this sub-family, referring, from the first, *Gyalecta* to *Lecidea*, Nyl., and proposing to unite even *Urceolaria* with *Lecanora* (in fact, *U. scruposa* really appears as *Lecanora* (*Urceolaria*) *scruposa*, Ach., Nyl., in Norrlin *Berättelse in Not. Sölsk. p. F. & Fl. Förh.*, 13, 1873); but the latter of these emendations of the system is now given

* A better word, perhaps, than either *Kerguelensis*, which Messrs. Nylander and Crombie have taken leave to substitute for it in the cited paper, or *Kerguelena*, which they elsewhere employ. It is formed from *Kerguelia*, an attempt at a short latinization of the land or island of Kerguelen. *Kerguelenia* may be more correct, and *Kergueliensis*; but hardly *Kerguela*.

up, and the former should appear to be also, as the learned author has of late described new species of *Gyalecta* (*Add. nov.* in Flora Ratisb. 1875, 1876), though without any indication of his present opinion of the limits and place of the genus. Possibly, then, the new *Urceolarii*-form genus from Kerguelen's Land may hereafter come into favor.

To this it is only necessary to add that the fragment of rock upon which apothecia of *Buellia parasema*, as I certainly considered them, appeared, is no longer within reach. Dr. Nylander is of opinion that they are "probably to be referred to" the closely related *B. myriocarpa*, which he has recognized on other fragments. But the former is a cosmopolitan lichen, and may well occur also.